

LISTING OF THE CLAIMS

By this paper, claims 5, 13-14 and 17-18 are canceled, claims 1, 6-7, 10-12, 20-21, 25, 29 and 32 are amended, and new claims 33-40 are added. No new matter is believed to be introduced as a result of the aforementioned amendments and new claims. The following is a listing of the claims pending in this application.

1. **(Currently amended)** A cathode head suitable for use in an x-ray device ~~that includes an anode having a target surface configured and arranged to receive electrons emitted by the cathode head so as to generate x-rays, and~~ the cathode head comprising:

an emitter block;

an emitter attached to the emitter block and configured to generate electrons of an electron beam ~~that defines a focal spot on the target surface of the anode; and~~

at least one magnetic element that defines an opening within which a portion of the emitter is positioned ~~arranged such that flux lines of a magnetic flux density B of a magnetic field associated with the at least one magnetic element are substantially perpendicular to a direction of travel of the electron beam.~~

2. **(Original)** The cathode head as recited in claim 1, wherein the at least one magnetic element comprises at least one electromagnet.

3. **(Original)** The cathode head as recited in claim 1, wherein the at least one magnetic element comprises at least one permanent magnet.

4. **(Original)** The cathode head as recited in claim 1, wherein the emitter block is substantially non-magnetic.

5. **(Canceled)**

6. **(Currently amended)** The cathode head as recited in claim 1, wherein the emitter defines a longitudinal axis ~~[[about]]~~ which extends through the opening defined by the at least one magnetic element ~~is disposed.~~

7. **(Currently amended)** The cathode head as recited in claim 1, wherein the at least one magnetic element comprises a pair of electromagnets, each of which defines an opening within which a respective portion of the emitter is positioned.

8. **(Original)** The cathode head as recited in claim 1, wherein the at least one magnetic element and the emitter block cooperate to create a magnetic field through which at least a portion of the electron beam passes.

9. **(Original)** The cathode head as recited in claim 1, wherein the emitter comprises at least one filament.

10. **(Currently amended)** A cathode head suitable for use in an x-ray device ~~that includes an anode having a target surface configured and arranged to receive electrons emitted by the cathode head, the cathode head and~~ comprising:

[[an]] a magnetic emitter block;

an emitter attached to the emitter block and configured to generate electrons for an electron beam that defines a focal spot ~~on the target surface of the anode;~~ and

means for facilitating focal spot control, wherein the means generates a magnetic field with a magnetic flux density B having flux lines that are substantially perpendicular to a direction of travel of the electron beam.

11. **(Currently amended)** The cathode head as recited in claim 10, wherein the means for facilitating focal spot control serves to adjust [[the]] a position of the focal spot ~~on the target surface.~~

12. **(Currently amended)** The cathode head as recited in claim 10, wherein the means for facilitating focal spot control enables at least lateral adjustments to [[the]] a position of the focal spot ~~on the target surface.~~

13. – 14. **(Canceled)**

15. **(Original)** The cathode head as recited in claim 10, wherein the means for facilitating focal spot control implements an adjustable deflection of the electron beam.

16. **(Original)** The cathode head as recited in claim 10, wherein the means for facilitating focal spot control acts on the electron beam in a location proximate the emitter.

17. – 18. **(Canceled)**

19. **(Original)** The cathode head as recited in claim 10, wherein the means for facilitating focal spot control cooperates with the emitter block to create a magnetic field through which at least a portion of the electron beam passes.

20. **(Currently amended)** An x-ray device, comprising:
a vacuum enclosure;
an anode substantially disposed within the vacuum enclosure, the anode including a target surface; and
a cathode head substantially disposed within the vacuum enclosure and comprising:
an emitter block;
an emitter attached to the emitter block and configured to ~~[[generate]]~~ emit electrons of an electron beam that defines a focal spot on the target surface of the anode;
and
~~at least one magnetic element arranged such that flux lines of a magnetic flux density B of a magnetic field associated with the at least one magnetic element are substantially perpendicular to a direction of travel of the electron beam~~ that defines an opening within which a portion of the emitter is positioned.

21. **(Currently amended)** The x-ray device as recited in claim 20, wherein the at least one magnetic element comprises a pair of ~~[[electro]]~~ magnets, each of which defines an opening within which a respective portion of the emitter is positioned.

22. **(Original)** The x-ray device as recited in claim 20, wherein the at least one magnetic element comprises a permanent magnet.

23. **(Original)** The x-ray device as recited in claim 20, wherein the emitter block is substantially non-magnetic.

24. **(Original)** The x-ray device as recited in claim 20, wherein the emitter block is magnetic.

25. **(Currently amended)** The x-ray device as recited in claim 20, wherein the emitter defines a longitudinal axis ~~[[about]]~~ which extends through the opening defined by the at least one magnetic element ~~is disposed~~.

26. **(Original)** The x-ray device as recited in claim 20, wherein the at least one magnetic element and the emitter block cooperate to create a magnetic field through which at least a portion of the electron beam passes.

27. **(Original)** The x-ray device as recited in claim 20, wherein the anode is a rotating anode.

28. **(Original)** The x-ray device as recited in claim 20, wherein the anode is a stationary anode.

29. **(Currently amended)** A cathode head suitable for use in an x-ray device ~~that includes a vacuum enclosure within which is disposed an anode having a target surface configured and arranged to receive electrons emitted by the cathode head, the cathode head being substantially disposed within the vacuum enclosure~~ and comprising:

an emitter block;

a filament attached to the emitter block and defining a longitudinal axis, the filament being configured to emit electrons of an electron beam ~~that defines a focal spot on the target surface of the anode~~; and

~~at least one electromagnet attached to~~ first and second magnetic elements that define respective openings within which the emitter block is positioned ~~and arranged such that flux lines of a magnetic flux density B of a magnetic field associated with the at least one electromagnet are substantially perpendicular to a direction of travel of the electron beam.~~

30. **(Original)** The cathode head as recited in claim 29, wherein the emitter block is substantially non-magnetic.

31. **(Original)** The cathode head as recited in claim 29, wherein the emitter block is magnetic.

32. **(Currently amended)** The cathode head as recited in claim 29, wherein ~~[[the]]~~ at least one of the magnetic elements ~~[[electromagnet]]~~ comprises ~~a pair of electromagnets~~ an electromagnet.

33. **(New)** The cathode head as recited in claim 1, wherein the at least one magnetic element is arranged such that flux lines of a magnetic flux density B of a magnetic field associated with the at least one magnetic element are substantially perpendicular to a direction of travel of an electron beam generated by the emitter.

34. **(New)** The x-ray device as recited in claim 20, wherein the at least one magnetic element is arranged such that flux lines of a magnetic flux density B of a magnetic field associated with the at least one magnetic element are substantially perpendicular to a direction of travel of an electron beam generated by the emitter.

35. **(New)** The cathode head as recited in claim 29, wherein a portion of the filament is positioned within one of the openings respectively defined by the magnetic elements.

36. **(New)** The cathode head as recited in claim 29, wherein flux lines of a magnetic flux density B of a magnetic field associated with at least one of the magnetic elements are substantially perpendicular to a direction of travel of the electron beam.

37. **(New)** The cathode head as recited in claim 29, wherein the emitter block substantially comprises ceramic.

38. **(New)** The cathode head as recited in claim 29, wherein at least one of the magnetic elements comprises a permanent magnet.

39. **(New)** The cathode head as recited in claim 29, wherein the first and second magnetic elements are disposed in a spaced apart arrangement with respect to each other.

40. (New) A cathode head suitable for use in an x-ray, the cathode head comprising:
- a magnetic emitter block;
 - an emitter attached to the magnetic emitter block; and
 - at least one magnetic element arranged such that flux lines of a magnetic flux density B of a magnetic field associated with the at least one magnetic element are substantially perpendicular to a direction of travel of the electron beam.